UNIVERSITY EXAMINATIONS

UNIVERSITEITSEKSAMENS

UNISA university of south africa

# INF3705 (493109) May/June 2017

## ADVANCED SYSTEMS DEVELOPMENT

Duration 2 Hours

100 Marks

**EXAMINERS**

FIRST PROF A COLEMAN
SECOND DR VZ HORNER
EXTERNAL PROF R KEKWALETSWE

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**Closed book examination**

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This examination question paper consists of 6 pages plus instructions for the completion of a mark-reading sheet

INSTRUCTIONS

1 Answer section A on the mark-reading sheet, and the rest of the questions in the answer book
2 All rough work must be done in the answer book
3 The mark for each question is given in brackets next to the question
4 Please answer the questions in the order in which they have been set If you wish to leave out a question temporarily and come back to it later, leave sufficient space for it in your answer book

## SECTION A. MULTIPLE-CHOICE QUESTIONS [50 MARKS]

1 Which of the following situation is most appropriate for agile software development?
1 When developments methods are flexible
2 When the process of software development is well defined
3 When requirements are well known in advance
4 All of the above

2 Select one level of protection which might not be used in an information system security

1 Platform-level protection
2 Application-level protection
3 Record-level protection
4 Usage -level protection

3 One key question which your team members should not answer at daily Scrum meeting is _____

1 What did you do since the last meeting?
2 What obstacles are you encountering?
3 What is the cause of the problems you are encountering?
4 What do you plan to accomplish in the next team meeting?

4 Which of the following is appropriate for the incremental model of software development?

1 When developments methods are flexible
2 When the process of software development is well defined
3 When a core product is required quickly
4 All of the above

5 What is the purpose of load testing?

1 To test the response rate of the system
2 To test the number of transactions that the system can handle simultaneously
3 To test during development
4 All of the above

6 The purpose of performance testing is to _____

1 To test the response rate of the system
2 To test the number of transactions that the system can handle simultaneously
3 To test during development
4 All of the above

7 Usability testing involves which of the following?

1 Deployment testing
2. Requirements validation
3 Load testing
4 All of the above

8 As a system developer, which of the following are elements to be considered in systems design?

1 Architecture, data and interfaces
2 Data interfaces and project scope
3 Systems models
4 All of the above

9 Which one of the following are concerns of software engineering

1 Architecture, data and interfaces
2 Data interfaces and project scope
3 Systems models
4 All of the above

10 An architectural style encompasses which of the following elements?

1 Constraints
2 Set of components
3 Semantic models
4 All of the above

11 To determine the architectural style or combination of styles that best fits the proposed system, requirements engineering is used to uncover _____

1 Algorithmic complexity
2 Characteristics and constraints
3 Control and data
4 Design patterns

12 Which of the following are elements of systems requirements?

1 Architecture, data and interfaces
2 Data, interfaces and project scope
3 Systems models
4 All of the above

13 Which of the following is preferable of software modules?

1 Low cohesion and high coupling
2 High cohesion and high coupling
3 High cohesion and low coupling
4 It depends on the situation

14 Cyber security dealing with secrecy or confidentiality threats is referred to as _____

1 Unauthorized modification of data
2 Denial of access to data and services
3 Unauthorized viewing of data
4 All of the above

15 Integrity threats refer to one of the following

1 Unauthorized modification of data
2 Denial of access to data and services
3 Unauthorized viewing of data

4 All of the above

16 Denial of access or availability threats refer to _____

1 Unauthorized modification of data
2 Denial of access to data and services
3 Unauthorized viewing of data
4 All of the above

17 The following can be classified as true of the Model–View-Controller (MVC) architectural pattern

1 It has three components
2 Has clients and servers
3 It is a sequential model of processing
4 None of the above

18 Prototyping involves the development of _____

1 Initial demonstration of concepts
2 A final product
3 A stable product
4 Beta version of the product

19 Which of the following is an attribute of a dependable software engineering process?

1 Documentable
2 Standardized
3 Auditable
4 All of the above

20 Redundancy and diversity are fundamental strategies in the dependability of a system
Which of the following is an example of diversity?

1 A spare/extra capacity
2 Object oriented design
3 Avoiding a single point of failure
4 All of the above

21 Which of the following exploits on reusable components in its design?

1 A backup mechanism
2 Object oriented design
3 Avoiding a single point of failure
4 All of the above

22 Socio -Technical systems is made up of different components including_____

1 Equipment
2 Operating system
3 Society
4 All of the above

23 Which of the following influence the reliability of a system?

1 Hardware reliability
2 Software reliability
3 Operator reliability
4 All of the above

24 Which of the following factor is not used to assess applications evolution?

1 Documentation
2 Data
3 Performance
4 Health

25 Why is it sometimes necessary to bypass the normal change management system and make urgent change to a system?

1 To satisfy management
2 To satisfy customer
3 To repair a serious system fault
4 None of the above

## SECTION B: STRUCTURED QUESTIONS [50 MARKS]

**Answer this section in the answer book provided.**

### QUESTION 1 [10]

You are a software engineering manager and your team proposes that model-driven engineering should be used to develop a new system What factors should you take into account when deciding whether or not to introduce this new approach (model- driven) to software development?

### QUESTION 2 [10]

You have been employed as a system developer in TECO systems Explain to your new team members the following process activities, specification, validation and evolution

### QUESTION 3 [10]

Members of your software development team think that agile methods should be based on principles Explain how the principles of agile methods will lead to accelerated development and deployment of software

### QUESTION 4 [10]

**Q 4.1**
What are the fundamental concepts of user and system requirements? (5)

**Q 4.2**
Why must these requirements be written in different ways? (5)

### QUESTION 5

[10]

As a system developer, your organization requires you to make a decision on system architecture Explain to your organization members what decisions have to be made about the system during the architectural design process?